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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Andrei Feldman

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EXAMINER

ABDI, AMARA

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/501,559	<b>Applicant(s)</b> FELDMAN, ANDREI	
	<b>Examiner</b> Amara Abdi	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4,6,11-13,15,17 and 18 is/are pending in the application.
- 4a) Of the above claim(s) 5,7-10,14,16 and 19-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,11-13,15,17 and 18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. Applicant's response to the last office action, filed April 16<sup>th</sup>, 2008 has been entered and made of record.
2. Applicant's arguments with respect to claims 1-4, 6, 11-13, 15, and 17-18 have been considered but are moot in view of the new ground(s) of rejection.

### **Remarks**

3. Applicant's arguments with respect to claim 1 have been fully considered, but they are not persuasive.

(a) Applicant argues that the "artifacts" of Simon et al., present a far different, and much simpler to overcome, obstacle than the "artifacts" addressed by the instant invention, and so the mere mention of removing "artifacts" in Simon et al. does not meet the claim limitation of producing an 'artifact-corrected' image.

However, in response to applicant's argument, the Examiner would like to point out that claim language is given its broadest reasonable interpretation. The specification is not measure of invention. Therefore limitations contained therein can not be read into the claims for the purpose of avoiding the prior art. *Ir re Sporck*, 55CCPA 743, 386 F, 2d 924, 155 USPQ 687 (1968). The method of Simon et al. is read the broad claim language calls for the producing of second digital image comprising artifacts, and producing the artifact-corrected computer representation, because the language does not specify any details about the "artifacts". In the instant case, the Applicant's allegation that "the artifacts being a results from what is present in the patient's mouth,

not from what is introduced into the mouth by the practitioner of the method” was not claimed. Thus any method of removing the “artifacts” could be read the broad claim producing artifact-corrected computer representation.

(b) Applicant argues that Simon et al., fail to disclose a method which, even when combined with the teachings of Poirier, would render obvious the invention as claimed.

However, in response to applicant’s argument, the Examiner disagrees because of the following precision:

Poirier discloses the forming of a negative impression (physical object or model) (column 6, line 43-46) of the recipient jaw (gum surfaces and teeth) (see the Abstract, line 5-9), and producing a first digital image of the negative jaw impression (column 6, line 20-23, and column 6, line 49-54), (it is read that the first digital image is produces by a scanner). Poirier does not explicitly mention Poirier does not explicitly mention the producing a second digital image, comprising the artifacts, and producing an artifact-corrected computer representation. Simon et al. teach the producing a second digital image (column 3, line 52-58), comprising the artifacts (column 3, line 40-43), and producing an artifact-corrected computer representation (reducing artifacts) (column 5, line 19-24).

All the elements are known in references of Poirier and Simon et al. The only difference is the combination of the producing of a second digital image comprising the artifacts and an artifact-corrected computer representation with the method of forming of

a negative impression of the recipient jaw and the producing of the first digital image of the negative jaw impression.

In addition, the KSR states: *"All the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yield predictable results to one of ordinary skill in the art at the time of the invention".*

Thus, it would have been obvious to one having ordinary skill in the art to use the producing of a second digital image comprising the artifacts and an artifact-corrected computer representation as thought by Simon et al. with the method of forming of a negative impression of the recipient jaw and the producing of the first digital image of the negative jaw impression as shown by Poirier, since the removing of artifacts in an image could be used in combination with the forming of a negative impression of the recipient jaw to achieve the predictable results of reducing the visual distraction caused by the marker artifacts (column 5, line 41-44).

(c) Applicant argues that Simon et al. do not teach the use of a negative impression of the patient, and comparing the known image of the negative impression with the image taken of the impression in the patient's mouth....

However, in response to applicant's argument, regarding the allegation that Simon et al. do not teach the use of a negative impression of the patient, the Examiner disagrees, because as mentioned above in (b), the use of the prior art reference of Poirier (US 5,725,376) clearly teach the forming of a negative impression (physical

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object or model) (column 6, line 43-46) of the recipient jaw (gum surfaces and teeth) (see the Abstract, line 5-9).

In response to the allegation that Simon et al. do not teach the comparing the known image of the negative impression with the image taken of the impression in the patient's mouth, as mentioned above, Poirier discloses the forming of a negative impression of the recipient jaw and Simon et al. does teach the removing of artifacts in an image (producing an artifact-corrected computer representation). To link the Poirier and Simon et al. references for an understandable rationale, the Examiner is introducing the prior art reference Elbaum et al. (US 6,201,880). Elbaum et al. teach the comparing of the first digital image (the prior image) and the second digital image (current image) (see the Abstract, line 9-11).

All the elements are known in Poirier and Elbaum et al. references. The only difference is the combination of the comparison of the first digital image and the second digital image with the forming of a negative impression of the recipient jaw.

In addition, the KSR states: *"All the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yield predictable results to one of ordinary skill in the art at the time of the invention"*.

Thus, it would have been obvious to one having ordinary skill in the art to use the comparing of the first digital image and the second digital image as taught by Elbaum et al. with the forming of a negative impression of the recipient jaw as shown by Poirier, since the comparison of the current image with the previous image could be used in

combination with the forming of a negative impression of the recipient jaw to achieve the predictable results of comparing the current images of a tooth with previously taken images to monitor changes in the structure of the tooth over time (column 13, line 46-48).

**Claim Rejections - 35 USC § 103**

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 6, 13, 15, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poirier (US 5,725,376) in view of Simon et al. (US 6,118,845) and Elbaum et al. (US 6,201,880).

**(1) Regarding claim 1:**

Poirier discloses the forming a negative impression (physical object or model) (column 6, line 43-46) of the recipient jaw (gum surfaces and teeth) (see the Abstract, line 5-9), and the producing of a first digital image of the negative jaw impression (column 6, line 20-23, and column 6, line 49-54), (it is read that the first digital image is produces by a scanner);

Poirier does not explicitly mention, producing a second digital image, comprising the artifacts, and comparing the first digital image and the second digital image to produce an artifact-corrected computer representation.

(a) Obviousness in view of Simon et al.

Simon et al., in analogous environment, teaches a system and method for the reduction and elimination of image artifacts in calibration of X-ray images, where producing a second digital image (column 3, line 52-58), comprising the artifacts (column 3, line 40-43), and producing an artifact-corrected computer representation (column 5, line 19-24), (the reducing of artifacts of an image is read as the same concept as the artifact- corrected image).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Simon et al., where producing an artifact-corrected image, in the system of Poirier, in order to reducing the visual distraction caused by the marker artifacts (column 5, line 41-44).

(b) Obviousness in view of Elbaum et al.

Elbaum et al., in analogous environment, teaches a method and apparatus for electronically imaging a tooth through transillumination by light, where comparing the current image (second digital image) and the previous image (first digital image) (see the abstract, line 9-11).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Elbaum et al., where comparing the first digital image and the second digital image, in the system of Poirier, in order to comparing the current images of a tooth with previously taken images to monitor changes in the structure of the tooth over time (column 13, line 46-48).



**(2) Regarding claim 2:**

Poirier further discloses the method, comprising adjusting the negative jaw impression during formation (column 5, line 41-43, and column 6, line 42-46), (it is read that the negative jaw impression is adjustable, since it is able to turn in about two direction) to allow easy manipulation of the impression (column 6, line 43-46) on the recipient jaw (see the Abstract, line 5-9), (the negative jaw impression is read as the physical model, and the recipient jaw is read as the gum surfaces and teeth).

**(3) Regarding claim 3:**

Poirier discloses the method, comprising setting one or more tooth implant models in said negative jaw impression, prior to producing said images (column 8, line 46-48), (it is read that the heads and teeth are implanted in the physical model, then generating a 3D computer model).

**(4) Regarding claim 6:**

Poirier discloses all the subject matter as described in claim 1 above.

Poirier does not explicitly mention the method, where the first and second digital images comprise voxels.

Simon et al., in analogous environment, teaches a system and method for the reduction and elimination of image artifacts in calibration of X-ray images, where each digitized image that is to be processed comprising pixel intensity (column 5, line 27, and line 39), (the pixel is read as voxel).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Simon et al., where each digitized image

comprises voxels, in the system of Poirier in order to reducing the visual distraction caused by the marker artifacts (column 5, line 41-44).

**(5) Regarding claim 13:**

Poirier discloses the producing of a drilling template using the computer graphic model (column 3, line 21-29).

Poirier does not explicitly mention the use of the artifact corrected computer representation.

Simon et al., in analogous environment, teaches a system and method for the reduction and elimination of image artifacts in calibration of X-ray images, where using the artifact corrected computer representation (column 5, line 19-24), (the reducing of artifacts of an image is read as the same concept as the artifact- corrected image).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Simon et al., where using the artifact corrected computer representation, in the system of Poirier in order to reducing the visual distraction caused by the marker artifacts (column 5, line 41-44).

**(6) Regarding claim 15:**

Poirier discloses the producing of model of the recipient jaw using the physical object (column 6, line 43-46 and the Abstract, line 5-9).

Poirier does not explicitly mention the use of the artifact corrected computer representation.

Simon et al., in analogous environment, teaches a system and method for the reduction and elimination of image artifacts in calibration of X-ray images, where using

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the artifact corrected computer representation (column 5, line 19-24), (the reducing of artifacts of an image is read as the same concept as the artifact- corrected image).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Simon et al., where using the artifact corrected computer representation, in the system of Poirier in order to reducing the visual distraction caused by the marker artifacts (column 5, line 41-44).

**(7) Regarding claim 17:**

Poirier discloses the using of recipient jaw model (column 6, line 43-46 and the Abstract, line 5-9) to produce a drilling template (column 3, line 21-29).

**(8) Regarding claim 18:**

Poirier discloses the using of the negative impression (column 6, line 43-46), (the negative impression is read as the physical object or model) of the recipient jaw (see the Abstract, line 5-9), (the recipient jaw is read as gum surfaces and teeth), to produce the drilling template (column 3, line 21-29).

6. Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poirier, Simon et al. and Elbaum et al., as applied to claim 1 above, and further in view of Kruger (US 5,927,982).

**(1) Regarding claim 4:**

Poirier, Simon et al. and Elbaum et al. disclose all the subject matter as described in claim 1 above.

Poirier, Simon et al. and Elbaum et al. do not explicitly mention the incorporating of one or more reference markings in the negative jaw impression wherein said reference markings are visible in said first and second images.

Kruger, in analogous environment, teaches a three dimensional guidance system for dental implant insertion, where placing in the pontic teeth a radio-opaque landmarks which will be visible in the first and second images (column 3, line 34-40), (the first and second images are read as CT-scan or any appropriate imaging system).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Kruger, where placing in the pontic teeth a radio-opaque landmarks which will be visible in the first and second images, in the system of Poirier in order to clearly show the outline of the pontic teeth in relation to vertical and to the occlusal plane and surfaces needed for optimum placement of the implant (column 3, line 46-49).

**(2) Regarding claim 12:**

Poirier, Simon et al. and Elbaum et al. disclose all the subject matter as described in claim 1 above.

Poirier, Simon et al. and Elbaum et al. do not explicitly mention the setting of one or more drilling trajectories in the artifact-corrected computer representation.

Kruger, in analogous environment, teaches a three dimensional guidance system for dental implant insertion, where setting of one or more drilling trajectories in the artifact-corrected computer representation (Fig. 3, column 4, line 60-67, and column 5, line 1-6), (the setting of one or more drilling trajectories is read as the same concept as

the setting of three dimensional orientation table, and the artifact-corrected computer representation is read as CT- scan).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Kruger, where setting the drilling trajectories, in the system of Poirier in order to clearly show the outline of the pontic teeth in relation to vertical and to the occlusal plane and surfaces needed for optimum placement of the implant (column 3, line 46-49).

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Poirier, Simon et al. and Elbaum et al., as applied to claim 1 above, and further in view Lichkus et al. (US 6,488,503).

Poirier, Simon et al. and Elbaum et al. disclose all the subject matter as described in claim 1 above. Furthermore, Simon et al. disclose the presenting of the image to the clinician free of artifacts (column 7, line 48-52).

Poirier, Simon et al. and Elbaum et al. do not explicitly mention the method, where forming an image of the upper portion of the first image and a lower portion of the second image where the upper portion is free of the artifacts.

Lichkus et al., in analogous environment, teaches a prosthetic teeth and method of making therefor, where forming an image comprising of at least one upper tooth and at least one lower tooth (Fig. 10A, column 10, line 18-21), (the forming of image of the upper portion of the first image and a lower portion of second image is read as the same concept as the displaying of one upper tooth and one lower tooth from the same image).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the system of Lichkus et al., where displaying an image of an upper tooth and a lower tooth, in the system of Poirier in order to provide artificial teeth with an enamel layer having zones of constant thickness (column 2, line 51-52).

### **Conclusion**

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### **Contact Information**

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amara Abdi whose telephone number is (571)270-1670. The examiner can normally be reached on Monday through Friday 8:00 Am to 4:00 PM E.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Amara Abdi/  
Examiner, Art Unit 2624

**/Jingge Wu/**

**Supervisory Patent Examiner, Art Unit 2624**